

Remarks

The Office Action dated January 30, 2007 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-4, 7, 9-11, 14-16, 17 and 19-21 are pending in this application. Claims 1-15 stand rejected. Claims 16, 17, and 19-21 are allowed. Claims 5, 6, 8, 12, 13, and 18 have been canceled.

In accordance with 37 C.F.R. 1.136(a), a one month extension of time is submitted herewith to extend the due date of the response to the Office Action dated January 30, 2007, for the above-identified patent application from April 30, 2007, through and including May 30, 2007. In accordance with 37 C.F.R. 1.17(a), authorization to charge a deposit account in the amount of \$120.00 to cover this extension of time request also is submitted herewith.

The rejection of Claims 1, 3-6, and 8 under 35 U.S.C. § 103(a) as being unpatentable over Wyss (European Patent Application EP 0 726 348) is respectfully traversed.

Wyss describes a gas permeable fabric made from a porous substrate that is treated with a mixture of a fluoropolymer and a polyamideimide which is useful at temperatures of 200°C to 280°C for extended periods. The fluoropolymer and a polyamideimide mixture is applied to the substrate and cured at 200°C and then pleated at a temperature of 200°C to 250°C. Wyss does not describe nor suggest that the treated fabric is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Also, Wyss does not describe that the treated substrate is pleated at a temperature above the application temperature, where the application temperature is greater than about 375°F.

Independent Claim 1 of the present application recites "[a] method of making a filter medium for use in a filtering application at an application temperature comprising: providing a substrate; providing a polyimide stiffening agent in solution; diluting the polyimide stiffening agent solution to approximately 5.5% solids; treating the substrate with the polyimide stiffening agent solution; curing the treated substrate; and pleating the treated substrate at a temperature above the application temperature, wherein the application temperature is greater than about 375°F; wherein the treated substrate with the polyimide stiffening agent is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi."

Wyss does not describe nor suggest a method as recited in Claim 1. Particularly, Wyss does not describe nor suggest a method that includes pleating the treated substrate at a temperature above the application temperature, wherein the application temperature is greater than about 375°F. Rather, Wyss describes applying a fluoropolymer and a polyamideimide mixture to the substrate and curing at 200°C and then pleating the substrate at a temperature of 200°C to 250°C. Also, Wyss does not describe nor suggest a method where the treated substrate with the polyimide stiffening agent is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. The Office Action, at page 3, suggests that "[b]ecause '348 uses the same materials and forms the filter by the same process, the filter formed by '348 must inherently possess the same capabilities as applicant's claimed filter, including the ability to withstand the same number/condition of cleaning pulses." Applicants disagree with this suggestion because the method described by Wyss is substantially different from the method recited in Claim 1 of the

present application. Particularly, Wyss describes pleating the treated substrate at a temperature of 200°C to 250°C. In contrast, Claim 1 of the present application recites pleating the treated substrate at a temperature above the application temperature, wherein the application temperature is greater than about 375°F. Not being bound by theory, Applicants believe that pleating the treated substrate at a temperature higher than 375°C prevents the stiffening agent (i.e., the polyimide) from continuing to crosslink during exposure to high application temperatures, which can cause brittleness and reduced strength of the filter. Wyss describes at page 4, lines 42-45, that "[e]ach compositions I, II and III provide a rigidized needle felt structure with adequate air permeability. However, composition I leads to a decrease in tongue tear strength of the needle felt as compared with untreated needle felt, whereas treatment with compositions II and III maintain or improve tongue tear strength." Composition I was PAI and the sample substrates were pleated at temperatures of 200°C to 250°C. In other words, Wyss teaches that treating a porous needle felt substrate with a PAI stiffening agent and pleating the substrate at a temperature of 200°C to 250°C produces a substrate that has less strength than an untreated substrate. Applicants submit that the substrate treated with the PAI stiffening agent and processed as taught by Wyss is not capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Applicants submit that Wyss teaches away from using a PAI stiffening agent. Further, The Examiner's Statement Of Reasons For Allowance in the parent application (10/000,236, now U. S. Patent No. 6,752,847), of which the present application is a divisional, indicate that the EP '348 reference fails to suggest a polyimide treated substrate capable of

withstanding at least 100,000 cleaning pulses at operation temperature. At least for the reasons set forth above, Applicants submit that independent Claim 1 is patentable over Wyss.

Claims 5, 6, and 8 have been canceled.

Claims 3 and 4 depend from independent Claim 1. When the recitations of dependent Claims 3 and 4 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3 and 4 likewise are patentable over Wyss.

Also, Applicants note that dependent Claim 7 was not indicated as being rejected or allowed in the Detailed Action on pages 2-5 of the Office Action. Claim 7 depends from independent Claim 1. When the recitations of dependent Claim 7 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 7 likewise is patentable over Wyss.

For the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 1, 3-6, and 8 be withdrawn.

The rejection of Claims 2 and 9-15 under 35 U.S.C. § 103 as being unpatentable over Wyss in view of Fukata (US 4,454,189) or Nakahara (European Patent Application EP 1096057) is respectfully traversed.

As explained above, Wyss does not describe nor suggest a method as recited in Claim 1.

Fukata is cited for teaching calendering fabric that will be made into a filter to compact the fabric and give it wet strength. Fukata is not cited for, and does not teach a method that includes pleating a treated filter substrate at a temperature above the application temperature, wherein the application temperature is greater than about 375°F. Nor does Fukata teach that the treated filter substrate is capable of withstanding at least 100,000 cleaning pulses at a

temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi.

Nakahara is cited for teaching a calendering step in the formation of a heat resistant fabric formed from polyphenylene sulfide fibers. Nakahara is not cited for, and does not teach a method that includes pleating a treated filter substrate at a temperature above the application temperature, wherein the application temperature is greater than about 375°F. Nor does Nakahara teach that the treated filter substrate is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi.

Wyss, Fukata, and Nakahara, alone or in combination, do not describe nor suggest a method as recited in Claim 1. Particularly, Wyss, Fukata, and Nakahara, alone or in combination, do not describe nor suggest a method that includes pleating the treated substrate at a temperature above the application temperature, wherein the application temperature is greater than about 375°F. Rather, as explained above, Wyss describes applying a fluoropolymer and a polyamideimide mixture the substrate and curing at 200°C and then pleating the substrate at a temperature of 200°C to 250°C. Neither Fukata nor Nakahara describe pleating at a temperature greater than about 375°C. Also, Wyss, Fukata, and Nakahara, alone or in combination, do not describe nor suggest a method where the treated substrate with the polyimide stiffening agent is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Particularly, at least for the reasons explained above, Wyss does not describe nor suggest a method where the treated substrate with the polyimide stiffening agent is capable of withstanding at least 100,000 cleaning

pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Fukata and Nakahara are silent as to a teaching of a treated substrate capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Accordingly, modifying the teachings of Wyss with the teachings of Fukata or Nakahara does not teach all the elements of Claim 1. Accordingly, Applicants submit that independent Claim 1 is patentable over Wyss, Fukata, and Nakahara, alone or in combination.

Claim 2 depends from independent Claim 1. When the recitations of dependent Claim 2 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 2 likewise is patentable over Wyss, Fukata, and Nakahara, alone or in combination.

Independent Claim 9 of the present application recites "[a] method of making a filter medium for use in a filtering application at an application temperature comprising: providing a polymer substrate; calendering the polymer substrate; providing a polyimide stiffening agent in solution; diluting the polyimide stiffening agent solution to approximately 5.5% solids; treating the calendered polymer substrate with the polyimide stiffening agent solution; curing the treated polymer substrate; and pleating the treated substrate at a temperature of about 430°C, wherein the treated polymer substrate with the polyimide stiffening agent is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi."

Wyss, Fukata, and Nakahara, alone or in combination, do not describe nor suggest a method as recited in Claim 1. Particularly, and at least for the reasons explained above, Wyss, Fukata, and Nakahara, alone or in combination, do not describe nor suggest a method that

includes pleating the treated substrate at a temperature of about 430°C. Rather, as explained above, Wyss describes applying a fluoropolymer and a polyamideimide mixture the substrate and curing at 200°C and then pleating the substrate at a temperature of 200°C to 250°C. Neither Fukata nor Nakahara describe pleating at a temperature of about 430°C. Also, Wyss, Fukata, and Nakahara, alone or in combination, do not describe nor suggest a method where the treated substrate with the polyimide stiffening agent is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Particularly, at least for the reasons explained above, Wyss does not describe nor suggest a method where the treated substrate with the polyimide stiffening agent is capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Fukata and Nakahara are silent as to a teaching of a treated substrate capable of withstanding at least 100,000 cleaning pulses at a temperature of about 375°F, a flowrate of about 1200 cubic feet per minute, and a pressure of about 60psi. Accordingly, modifying the teachings of Wyss with the teachings of Fukata or Nakahara does not teach all the elements of Claim 9. Accordingly, Applicants submit that independent Claim 9 is patentable over Wyss, Fukata, and Nakahara, alone or in combination.

Claims 12 and 13 have been canceled.

Claims 10, 11, 14, and 15 depend from independent Claim 9. When the recitations of Claims 10, 11, 14, and 15 are considered in combination with the recitations of Claim 9, Applicant submits that dependent Claims 10, 11, 14, and 15 likewise are patentable over Wyss, Fukata, and Nakahara, alone or in combination.

For the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 2 and 9-15 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael Tersillo", written over a horizontal line.

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